Improved Anti-Entropy with Reinforcement Learning

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ABSTRACT

Eventual consistency systems can be made more consistent by improving the visibility of a write, that is the time until a write is fully replicated. Gossip based anti-entropy methods scale well but random selection of anti-entropy partners results in less than efficient replication. We propose a simple improvement to pairwise, bilateral anti-entropy; instead of uniform random selection we introduce reinforcement learning mechanisms which assign selection probabilities to replicas most likely to have information. The result is efficient replication, faster visibility, and higher consistency, while still providing high availability and partition tolerance.

CCS CONCEPTS

• **Computing methodologies** → **Reinforcement learning**; • **Computer systems organization** → **Fault-tolerant network topologies**; *Reliability*; *Availability*;

KEYWORDS

Eventual Consistency, Anti-Entropy, Reinforcement Learning

1 INTRODUCTION

A basic sketch of an eventually consistent system is as follows:

REFERENCES

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